



**STANDARD FOR INSTALLATION OF  
STATIONARY FIRE PUMPS FOR FIRE PROTECTION**  
EFFECTIVE DATE: JANUARY 1, 2020

*Office of the Fire Marshal*

NFPA 20-2019 edition, including appendices is hereby added to the list of recognized standards, as contained in Chapter 80 of the California Fire Code, with the following amendments and comments:

**1.0 PERMITS**

- 1.1 We no longer accept paper plans. Plans are to be submitted using the SJePlans system. Uploaded files must be correctly named. See “**Fire SJePlans File Naming Convention**”. To acquire an installation permit for the automatic sprinkler system, submit the following to the San Jose Fire Department’s Bureau of Fire Prevention (BFP):
    - 1.1.1 To apply for fire and hazardous materials systems permits, please schedule an appointment and complete your application submittal using SJePlans.
    - 1.1.2A completed Fire Protection and Special Systems Installation Permit form (permit application) – for project/facility business name, if the project is speculative, type-in “SPEC.” followed by the anticipated occupancy (e.g., SPEC OFFICE, SPEC. WAREHOUSE, ETC.).
    - 1.1.3 The San Jose Fire Department Plan Check Comments (Plan Check Directives) – this may be obtained from the general contractor or architect.
    - 1.1.4 All approved variances or alternate means or methods of constructions that are relevant to the project – these may be obtained from the general contractor or architect.
    - 1.1.5 Shop quality plans, calculations and supporting documents for the proposed underground piping system
  - 1.2 Initial permit fees will be collected when plans are submitted. Permit fees are non-refundable. See current Fee Schedule.
  - 1.3 Permits are required for all new life safety and any alteration to or addition to a life safety system.
  - 1.4 All installing contractors shall have a California Contractor's License, a valid Worker's Compensation certificate, and a San Jose Business License. The said license and certificate numbers shall be indicated on the permit application prior to submittal of an installation permit.
- Note:** *A Fire Protection Contractor’s License (C-16) shall be required for the application for the Fire Pump permit.*
- 1.5 Equipment and piping shall not be installed prior to approval of plans and issuance of permits.
  - 1.6 The permit and a San Jose Fire Department approved set of plans must be kept at the project site until final approval of the permit, after which they shall remain in the possession of the owner.

1.7 Plans not conforming to the minimum requirements herein will be returned as incomplete.

## 2.0 **PLANS**

- 2.1 The pump shall be selected and installed in accordance with NFPA 20 (2019 edition); California Building Code (2019 edition); the San Jose Municipal Code and Chapter 17.12 as modified by Local Ordinance
- 2.2 All plans shall show the relevant data listed in NFPA 20 4.2.3.1.
- 2.3 The plans shall be stamped and signed by the designer of record (installing contractor or professional engineer). The designer's name shall be clearly printed on the plans – no pseudonyms, acronyms, and/or aliases. Licensed, fully experienced, and responsible persons shall perform the installation work.
- 2.4 The designer of record shall be responsible for the entire system being worked on.
- 2.5 A scope of work demonstrating the extent of work to be performed- and that this work corresponds to the scope given to the building department to obtain the building permit- referenced on this application shall be presented on the cover sheet including the occupancy group as defined by the California Building Code Chapter 3.
- 2.6 A key plan of the building and/or complex indicating the street location and the area of work within the building shall be provided.
- 2.7 Plans and all revisions to the plans shall be dated. If utilizing an existing drawing or a portion of a drawing, the area of work shall be highlighted and clouded with an appropriate revision symbol Δ (delta). Provide a revision list with a symbol, date, description, and initials.
- 2.8 Plans shall be drawn to limit one building per page, one floor per page, or one system per page. The minimum scale for plans shall be 1/8" = 1'-0". Floor plans shall be fully dimensioned. Sketches shall not be accepted. Match lines shall be clearly identified with corresponding drawing number.
- 2.9 A legend shall be provided, and the symbols used shall match the legend. Strike out any "typical" symbols and/or details, which do not pertain.
- 2.10 All equipment and devices shall be indicated on the plan and shall be listed by a nationally recognized testing agency.

**Note:** *The Fire Department reserves the right to disallow any listed product due to past performance.*

- 2.11 The location of pipes, pipe stands, sway braces, hangers, and other pertinent devices shall be clearly indicated on the plans.
- 2.12 If technical expertise is unavailable within the Fire Department because of new technology, process, products, facilities, materials, and uses attending the design, operation or use of a building, or premises, the Fire Department may require the applicant to provide, without charge to the Fire Department, a technical opinion and report, or plan review. The opinion and report or plan review shall be prepared by a qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Department and the applicant and shall analyze the design, operation, or use of the building or premises as it relates to required codes and ordinances.

### 3.0 **DESIGNS**

#### 3.1 **Equipment Access**

3.1.1 Section 4.14.1 - All exterior fire pumps shall be installed in a dedicated building (pump house). (Ord. 30327.)

3.1.2 Section 4.14

**Amended:** Provide sufficient space in pump room so that there is adequate workspace on all sides of the pump and associated equipment.

3.1.3 Section 4.14.2.1

**Note:**

Location and access to the fire pump room shall be pre-planned with the fire department. In accordance with CFC 509.2; Approved access shall be provided and maintained for all fire protection equipment to permit immediate safe operation and maintenance of such equipment. Hence, fire pump rooms shall be directly accessible from the exterior of the building. A fire rated corridor may be acceptable for access depending on the location and configuration.

3.1.4 Section 4.14.1.1.5

**Note:**

All interior fire pump rooms shall be free from storage and penetrations not essential to the operation of the pump and related components. Hence, no equipment shall be installed in the pump room that is not specifically for the pump.

#### 3.2 **Suction Pipe, Fittings, and Devices**

3.2.1 Section 4.16.9.2(3)

**Note:**

Positive supply pressure shall be maintained through alarms that shall be arranged for audio and visual annunciation at the FACU and in the fire pump room if the water supply drops below 5 psi.

3.2.2 Section 4.16.4.1

**Amended:**

All fire pumps shall be installed with a bypass. The size of the bypass shall be at least as large as the pipe size required for discharge pipe as specified in Table 4.28(a).

#### 3.3 **Discharge Pipe, Fittings, and Devices**

3.3.1 Section 4.17.10.1

**Amended:**

Positive supply pressure shall be maintained through alarms that shall be arranged for audio and visual annunciation at the FACU and in the fire pump room if the water supply drops below 5 psi. (Ord. 30327.)

3.3.2 Section 4.17.10.2

**Note:**

A suction pressure regulating valve shall be installed to sense the pressure in the water supply and automatically send a signal to a valve on the discharge side of the pump. This valve will not close all the way, but it will throttle back the discharge, allowing the pump to keep sending water to the fire, while the water supply recovers because the flow demand has been decreased.

### 3.4 Valve Supervision

#### 3.4.1 Section 4.18.1

**Amended:**

Supervised Open. Where provided, the suction valve, discharge valve, jockey pump valves controller valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by the following methods:

- (1) Central station, proprietary or remote station signaling services through the FACU.
- (2) Local signaling service that will cause the sounding of an audible alarm at a constantly attended point &
- (3) Locking valves open only if the building has no FACU.
- (4) Delete

### 3.5 Water Flow Test Devices

#### 3.5.1 Section 4.22.1

To facilitate flow testing, all fire pumps shall be equipped with both of the following: (Ord. 30327.)

i. Test Header. This device is connected to the discharge side of the pump and has a number of hose outlets per Table 4.28

a. When testing the pump, the hose is connected to the outlets with water discharged to a safe location. Flow readings are usually taken from the end of the hose with a Pitot gauge.

ii. Flow Meter. A special pipe is run from the discharge side of the pump back to the water supply (or to some other acceptable discharge point) with a flowmeter and control valve in the line. When testing the pump, the control valve is opened partially (with the pump already running) to achieve the 100 percent flow condition. The valve is opened more to achieve the 150 percent flow condition.

### 3.6 Water Supply Protection

#### 3.6.1 Section 8.5.6

**Note:**

In accordance with City of San Jose Municipal Code Section 15.08.670E, if a customer receiving service at the city's main or service connection must elevate or increase the pressure of the water received by means of a pump of any kind, the pump shall not be attached to any pipe directly connected to the city's distribution facilities. (See NFPA 20, Section 4.33) However, for the purpose of private fire protection service only, customers may request an exception from the requirements of this Section 15.08.670E. by submitting a written application to the director and supporting plans which clearly describe the proposed location of the pump to the director for review and approval.

### 3.7 Reliable Power

#### 3.7.1 Section A.9.3.2

A reliable power source possesses the following characteristics:

- (1) The source power plant has not experienced any shutdowns longer than 10 continuous hours in the year prior to plan submittal. NFPA 25 requires special undertakings (i.e., fire watches) when a water-based fire protection system is taken out of service for longer than 10 hours. If the normal source power plant has been intentionally shut down for longer than 10 hours in the past, it is reasonable to require a backup source of power.

(2) Power outages have not routinely been experienced in the area of the protected facility caused by failures in generation or transmission. This standard is not intended to require that the normal source of power be infallible to deem the power reliable. NFPA 20 does not intend to require a backup source of power for every installation using an electric motor-driven fire pump.

(3) The normal source of power is not supplied by overhead conductors outside the protected facility. Fire departments responding to an incident at the protected facility will not operate aerial apparatus near live overhead power lines, without exception. A backup source of power is required in case this scenario occurs and the normal source of power must be shut off. Additionally, many utility providers will remove power to the protected facility by physically cutting the overhead conductors. If the normal source of power is provided by overhead conductors, which will not be identified, the utility provider could mistakenly cut the overhead conductor supplying the fire pump.

(4) Only the disconnect switches and overcurrent protection devices permitted by 9.2.3 are installed in the normal source of power. Power disconnection and activated overcurrent protection should occur only in the fire pump controller. The provisions of 9.2.2 for the disconnect switch and overcurrent protection essentially require disconnection and overcurrent protection to occur in the fire pump controller. If unanticipated disconnect switches or overcurrent protection devices are installed in the normal source of power that do not meet the requirements of 9.2.2, the normal source of power must be considered not reliable and a backup source of power is necessary.

**Note:**

For electric driven fire pumps, provide written verification from the power provider that the normal power source is reliable as defined by 2019 NFPA 20 A.9.3.2. Otherwise an alternate power source shall be required.

#### 4.0 **INSPECTIONS**

4.1 Field inspections can be scheduled only after a permit has been issued. Only the installing contractor shall schedule all tests and inspections. To schedule an inspection, call (408) 535-3555 at least 3 days before the desired inspection date.

**Note:**

- a) When scheduling an inspection, it is the contractor's responsibility to request sufficient time to complete a thorough inspection of the work performed. Inspections are booked in increments of one hour. This time includes travel and completion of the Record of Inspection form.
- b) Missed inspections or inspections cancelled less than 48 hours before the scheduled date shall be billed as an inspection for the amount of time booked.
- c) Inspections are provided as covered by the permit fees. Additional inspections shall be billed by the amount of time required.
- d) Pursuant to Chapter 5.5, Division 1, Title 19 of the California Code of Regulations, effective 7/1/17 any individual performing the installation, alteration, or repair of water-based fire protection systems will be certified or registered with the State Fire Marshal. Violators may be subject to a "Stop Work Order".

4.2 System acceptance shall be in accordance with NFPA 20, Chapter 14

4.3 Factory authorized representative provided Field Acceptance Test shall be witnessed by and

provided to SJFD.

4.4 As-built drawings are to be submitted at the time of final inspection when there are deviations from the approved plan(s).

5.0 **DOCUMENT REVISIONS**

5.1 This document is subject to revisions. For general information and to verify that you have the most current document, see SJFD development website, or call (408) 535-7750 and request the current version date.